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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,478	11/30/2001	Scott E. Black	38190/240126	6394

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ALSTON & BIRD LLP
BANK OF AMERICA PLAZA
101 SOUTH TRYON STREET, SUITE 4000
CHARLOTTE, NC 28280-4000

EXAMINER	
PIAZZA CORCORAN, GLADYS JOSEFINA	
ART UNIT	**PAPER NUMBER**
1733	

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	09/998,478	BLACK ET AL.	
	Examiner	Art Unit	
	Gladys J Piazza Corcoran	1733	

-- Th MAILING DATE of this communicati n appears on the c ver sheet with the correspondence address --

Period f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 October 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-35* is/are pending in the application.

4a) Of the above claim(s) *21-35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2, 3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 21-35 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Groups II and III, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 5.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3-5, 15-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claims 3-5, 15-17 recite the limitation "the constructing step" in line 1. There is insufficient antecedent basis for this limitation in the claims. There is no constructing step in the claims.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-6, 8-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Tam (US Patent No. 5,447,586).

Tam discloses a method of heating a fiber tape for forming a composite article (column 1, lines 45-68) by providing a feed forward response surface that defines a plurality of data points correlating a predefined velocity of the fiber tape (Vs), a predefined feedforward control value, and a resulting temperature of the tape (Ts) (column 4, lines 27-63), measuring a temperature of the tape (T2), determining a velocity of the tape (V2), determining a feedback control value based on the temperature of the fiber tape and a target temperature of the fiber tape (column 4, lines 32-39), and determining a feedforward control value based on the target temperature of the tape and the velocity of the fiber tape and according to the feedforward response surface (column 4, lines 40-63), determining a heat control value based on the feedback control value and the feedforward control value (column 5, lines 1-10) and heating the fiber tape based on the heat control value (column 5, lines 10-15).

As to claim 2, Tam discloses providing a feed forward response surface comprises constructing a feedforward data table of data points and determining a feed forward control value comprising retrieving a value from the feed forward data table based on the target temperature and velocity of the tape. As to claim 3, Tam discloses operating a fiber placement machine at the predefined velocity of the fiber tape, providing the predefined feedforward control value as a heat control value, measuring the resulting temperature of the fiber tape, storing the predefined velocity, predefined

feedforward control value and the resulting temperature as a data point in the table of data points. As to claim 4, Tam discloses calculating the resulting temperature based on the predefined velocity of the fiber tape, and the predefined feedforward control value, and storing the predefined velocity the predefined feedforward control value and the resulting temperature as a data point in the table of data points. As to claim 5, Tam discloses mathematically defining a correlation between the predefined velocity the predefined feedforward control value and the resulting temperature of the fiber tape (column 5, lines 1-10). As to claim 6, Tam discloses determining the feedforward value comprises mathematically defining the feedforward control value according to the feed forward response surface and based on the target temperature and the velocity of the fiber tape. As to claim 8, Tam discloses setting the target temperature of the tape (Ts). As to claim 9, Tam discloses measuring the velocity of the fiber tape (V2; tachometer 31). As to claim 10, Tam discloses setting a target velocity (Vs) of the fiber tape and determining the velocity of the tape based on the target velocity of the fiber tape (Vs). As to claim 11, Tam discloses determining feedback control value utilizing proportional-integral-differential control (column 5, lines 1-10). As to claim 12, Tam discloses determining the heat control value by summing the feedback control value and the feedforward control value.

8. Claims 1-6, 8-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Zaffiro (US Patent No. 5,177,340).

Zaffiro discloses a method of heating a fiber tape for forming a composite article by providing a feed forward response surface that defines a plurality of data points

correlating a predefined velocity of the fiber tape, a predefined feedforward control value, and a resulting temperature of the tape, measuring a temperature of the tape (column 6, lines 5-11), determining a velocity of the tape (column 6, line 12), determining a feedback control value based on the temperature of the fiber tape and a target temperature of the fiber tape (column 8), and determining a feedforward control value based on the target temperature of the tape and the velocity of the fiber tape and according to the feedforward response (column 7), determining a heat control value based on the feedback control value and the feedforward control value (column 9) and heating the fiber tape based on the heat control value (column 12).

As to claim 2, Zaffiro discloses providing a feed forward response surface comprises constructing a feedforward data table of data points and determining a feed forward control value comprising retrieving a value from the feed forward data table based on the target temperature and velocity of the tape. As to claim 3, Zaffiro discloses operating a fiber placement machine at the predefined velocity of the fiber tape, providing the predefined feedforward control value as a heat control value, measuring the resulting temperature of the fiber tape, storing the predefined velocity, predefined feedforward control value and the resulting temperature as a data point in the table of data points. As to claim 4, Zaffiro discloses calculating the resulting temperature based on the predefined velocity of the fiber tape, and the predefined feedforward control value, and storing the predefined velocity the predefined feedforward control value and the resulting temperature as a data point in the table of data points. As to claim 5, Zaffiro discloses mathematically defining a correlation

between the predefined velocity the predefined feedforward control value and the resulting temperature of the fiber tape. As to claim 6, Zaffiro discloses determining the feedforward value comprises mathematically defining the feedforward control value according to the feed forward response surface and based on the target temperature and the velocity of the fiber tape. As to claim 8, Zaffiro discloses setting the target temperature of the tape. As to claim 9, Zaffiro discloses measuring the velocity of the fiber tape. As to claim 10, Zaffiro discloses setting a target velocity of the fiber tape and determining the velocity of the tape based on the target velocity of the fiber tape. As to claim 11, Zaffiro discloses determining feedback control value utilizing proportional-integral-differential control. As to claim 12, Zaffiro discloses determining the heat control value by summing the feedback control value and the feedforward control value.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 2-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tam (US Patent No. 5,447,586) or alternatively Zaffiro (US Patent No. 5,177,340).

Tam and Zaffiro both disclose controlling the fiber tape heating method in the same manner as Applicants. Applicant's particular limitations on the controlling of the heating are considered disclosed by the references and further well known in the controlling art. As to claim 7, defining the feedforward value as the claimed equation is well known in the art and would have been well within the purview of one of ordinary skill in the art, only the expected results would be maintained.

12. Claims 13-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tam (US Patent No. 5,447,586) or alternatively Zaffiro (US Patent No. 5,177,340) as set forth above and further in view of Krause et al. (US Patent No. 5,886,313) and/or Beyer et al. (US Patent No. 5,705,788).

Both the references Tam and Zaffiro disclose heating the fiber tape and compacting the heated tape against a workpiece such that the fiber tape conforms to the contour of the workpiece and is adhered thereto. It is well known in the art to heat the tape materials by irradiating the fiber tape with a laser diode array. For example, Krause and/or Beyer both show heating a tape material with a laser diode array. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method of controlling the heating of a fiber tape by the methods a shown by Tam or alternatively Zaffiro by heating the tape with a laser diode array as is well known

in the art and further exemplified by Krause and/or Beyer, only the expected results would be attained. As to claim 14-19, 20 see the discussion of claim 2-7, 11 above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gladys J Piazza Corcoran whose telephone number is (703) 305-1271. The examiner can normally be reached on M-F 8am-5:30pm (alternate Fridays off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (703) 308-3853. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Gladys J Piazza Corcoran
Examiner
Art Unit 1733

GJPC